



Caltex VARTECH™ Industrial System Cleaner Helps Restore SJV Gas Turbine to Maximum Productivity for an Annual Revenue Gain of over \$350,000*

Chevron North America Exploration Production Company, San Joaquin Valley Business Unit, McKittrick, California

The Situation

The southern end of California's Central Valley is very hot. Summer temperatures typically exceed 90°F and frequently climb into the 100s. This creates challenging work conditions for people and equipment.

Chevron San Joaquin Valley Business Unit (SJV) operates more than 16,000 wells, producing 159,000 barrels of crude and 53 million cubic feet of natural gas daily. Despite the severe environment, SJV has thrived for over 100 years and is California's top oil and gas producer.

SJV has world-class heavy crude oil steamflooding expertise. The SJV oilfield located in McKittrick, CA (west of Bakersfield) uses a Solar Taurus 60 gas turbine in a co-generation configuration, simultaneously producing steam and electricity. The steam facilitates oil recovery using the steamflooding process and the electricity is sold to a power utility.

Steamflooding is a thermal oil-recovery method in which steam is injected into the reservoir to reduce crude viscosity and assist in pumping it to the surface.

During summer, the gas turbine was running too hot to operate at its full design capacity. Even when running just below the lubrication oil and bearing alarm temperatures, the turbine could produce only 3.3MW of electricity,

significantly under its 5.5MW design capacity. High ambient temperatures were part of the problem, but the SJV operations team also suspected that varnish was interfering with the efficiency of the oil coolers. Visual inspection of the lubricant reservoir revealed varnish bathtub rings, supporting the suspicion that varnish was the culprit.

The lost electricity production was also causing lost revenue. Having 2MW less to sell to the local power utility was costing SJV over \$350,000 in revenue per year.*



The Solution

To address the varnish issue, the SJV team:

- Changed the oil filters
- Replaced 15% of the used in-service oil with Caltex VARTECH™ Industrial System Cleaner (ISC)
- Restarted the system

As the gas turbine approached full capacity, it was apparent that something had radically changed. All system temperatures remained within the acceptable range, and no alarms were triggered.



SJV WAS ABLE TO OPERATE THE GAS TURBINE AT FULL CAPACITY WITH NO TEMPERATURE ALARMS

	BEFORE VARTECH™ ISC	AFTER VARTECH ISC	IMPACT
Header temp. (°F)	159	154	-5
Bearing temp. (°F)	206	194	-12
Unit output (MW)	3.3	5.5	+2.2

The gas turbine continued at full capacity for two weeks with no high-temperature alarms. Then the mixture of used in-service turbine oil and VARTECH ISC was drained. The system was flushed, the filters replaced, and the system refilled with Caltex GST® turbine oil. The gas turbine has operated flawlessly at full design capacity ever since.

Results

VARTECH ISC allows SJV to operate its co-generation equipment at full capacity year-round, even during the hottest summer months, to ensure maximum revenue from the sale of electricity.

“VARTECH Industrial System Cleaner did its job perfectly, and we can now run the unit at its full design capacity. The operators are very happy because they don’t have to constantly monitor temperatures and juggle the output.”

— Andrew Gerlings,
Lead Power Solutions Operations Engineer

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